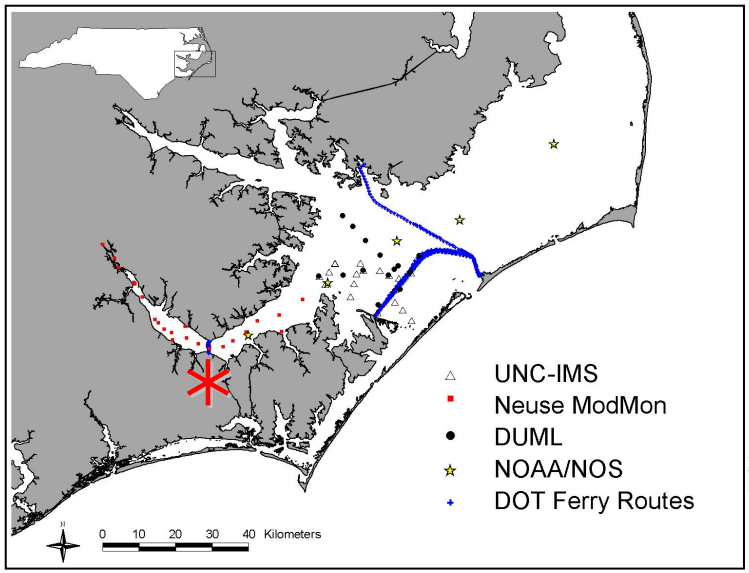
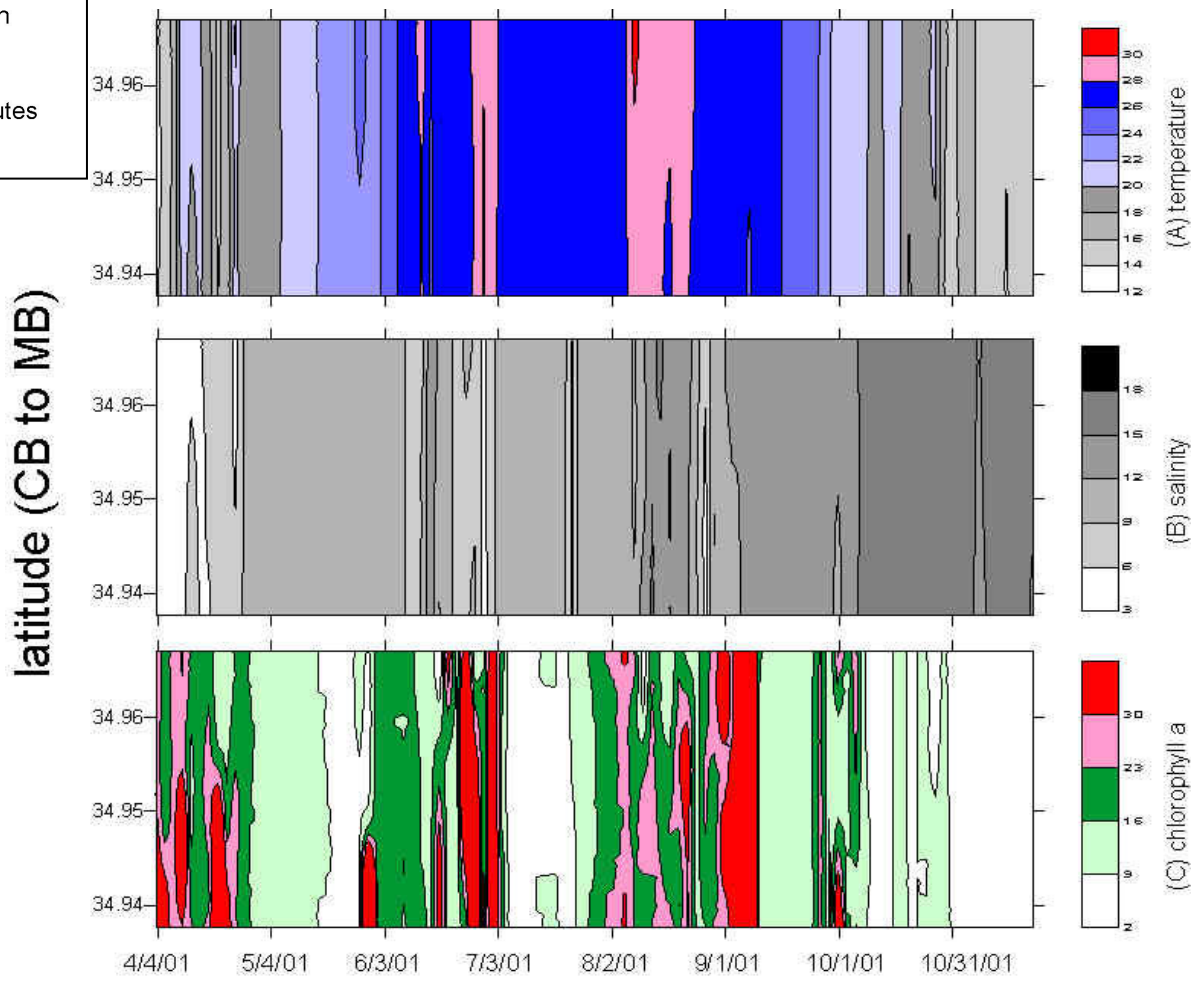
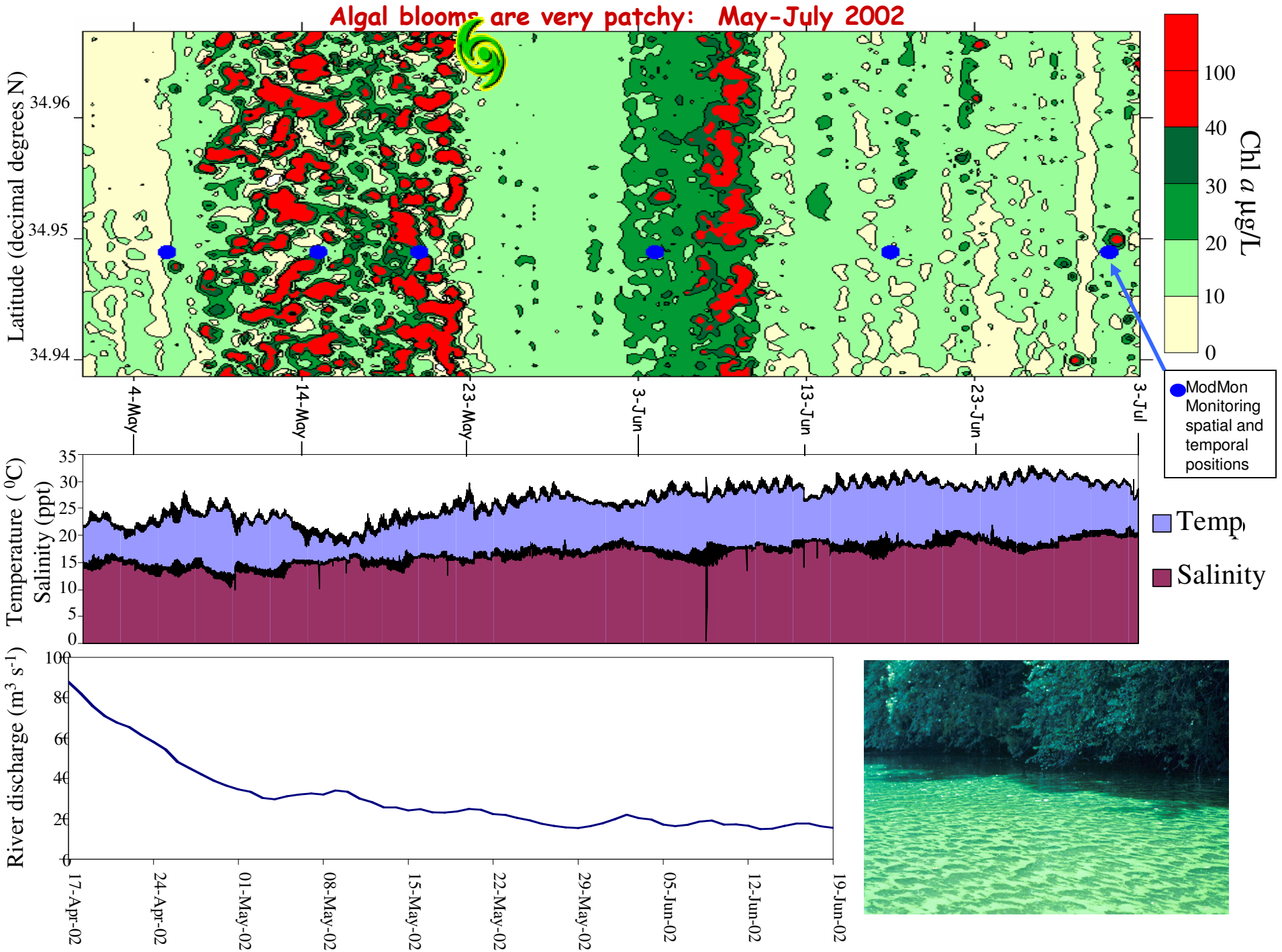
Detecting Algal Blooms

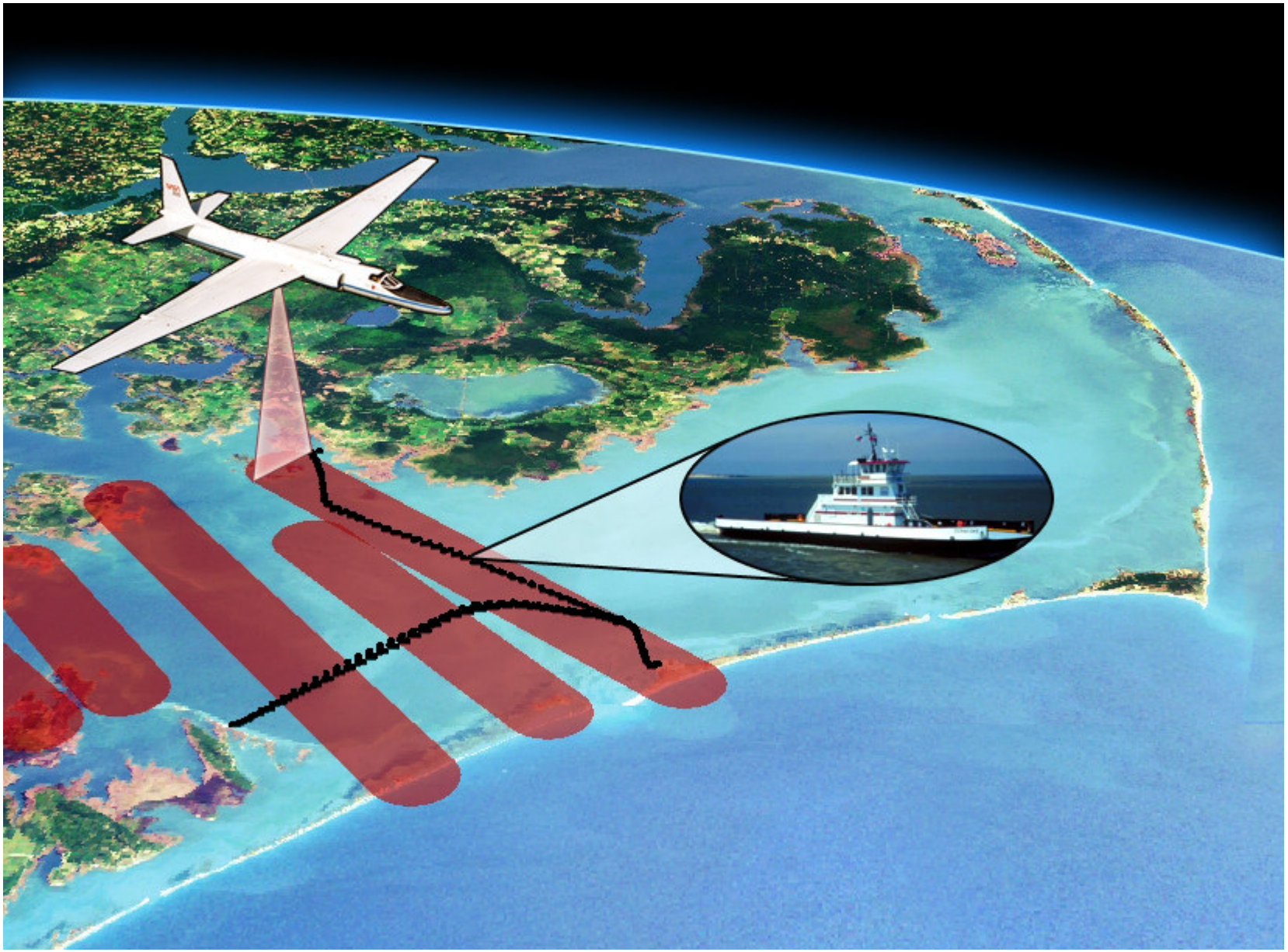
Cherry Branch-Minnesott Ferry





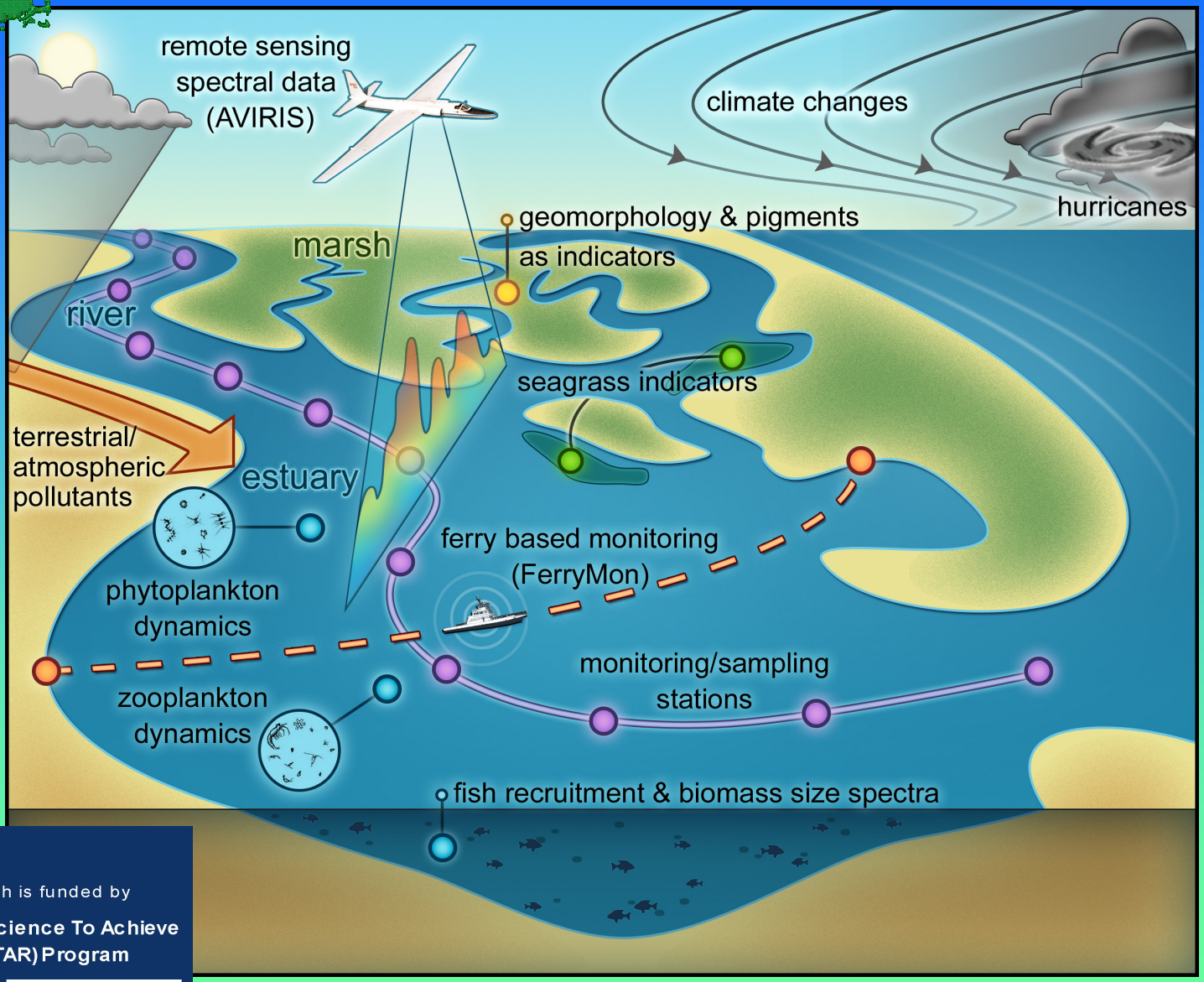

Algal blooms are very patchy: May-July 2002
Latitude (decimal degrees N)
34.96
34.95
34.94
4-May
14-May
23-May
3-Jun
13-Jun
23-Jun
3-Jul
Chl a µg/L
100
40
30
20
10
0
ModMon Monitoring spatial and temporal positions
Temperature (0C)
Salinity (ppt)
35
30
25
20
15
10
5
0
Temp
Salinity
River discharge (m3 s-1)
100
80
60
40
20
0
17-Apr-02
24-Apr-02
01-May-02
08-May-02
15-May-02
22-May-02
29-May-02
05-Jun-02
12-Jun-02
19-Jun-02

Enabling Advanced Research and Interdisciplinary Collaboration with EPA and NASA. Characterizing algal blooms using diagnostic indicators



Coastal Indicators as Management Tools

www.aceinc.org



Thanks to

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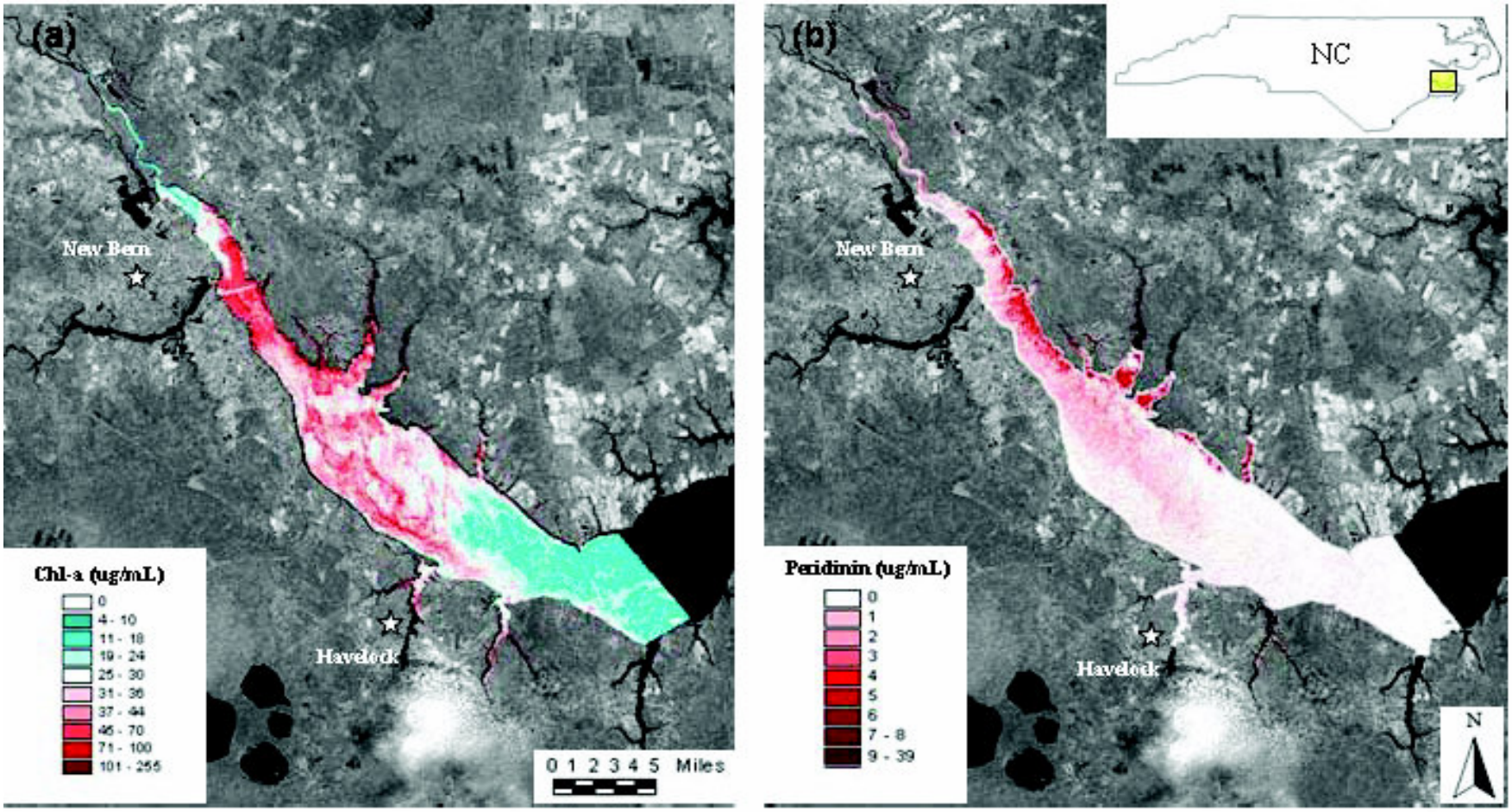
NOAA-ECOHAB, NSF, NC Sea Grant, USDA

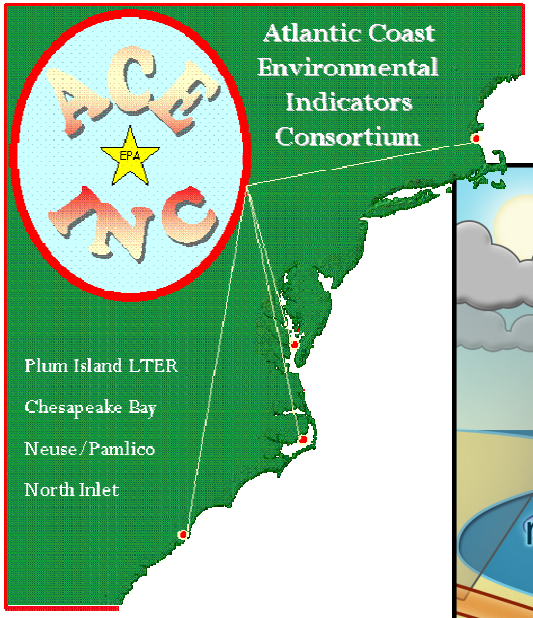
Microalgal Indicators and Remote Sensing



Estimated Chlorophyll-a and Peridinin concentrations in the Neuse River Estuary 15 May 2002 as determined with AVIRIS and ACE INC data. (Lunetta 2007 in prep)

Users: EPA-RTP, NASA, NC DENR-DWQ

Coastal Indicators as Management Tools



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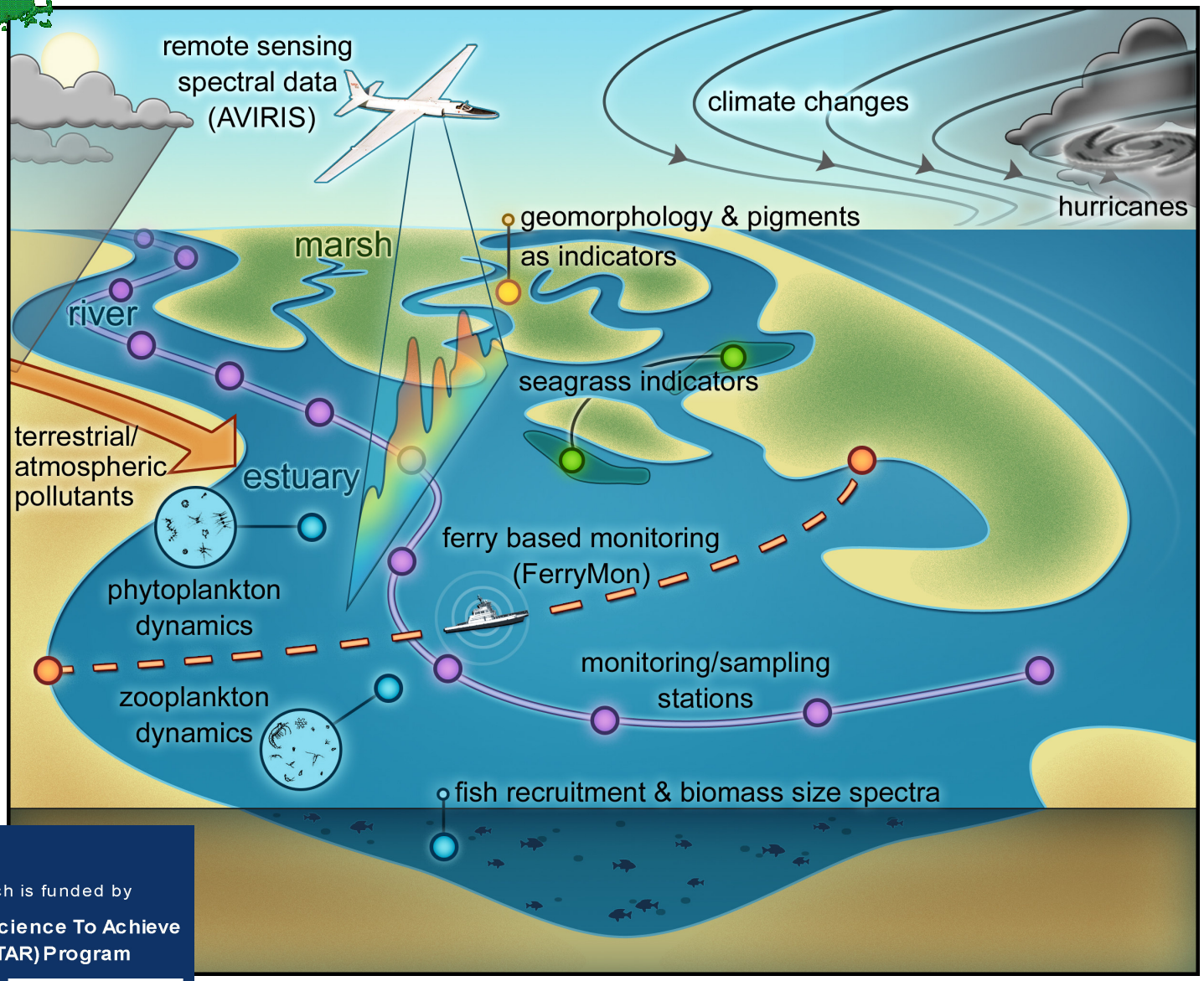

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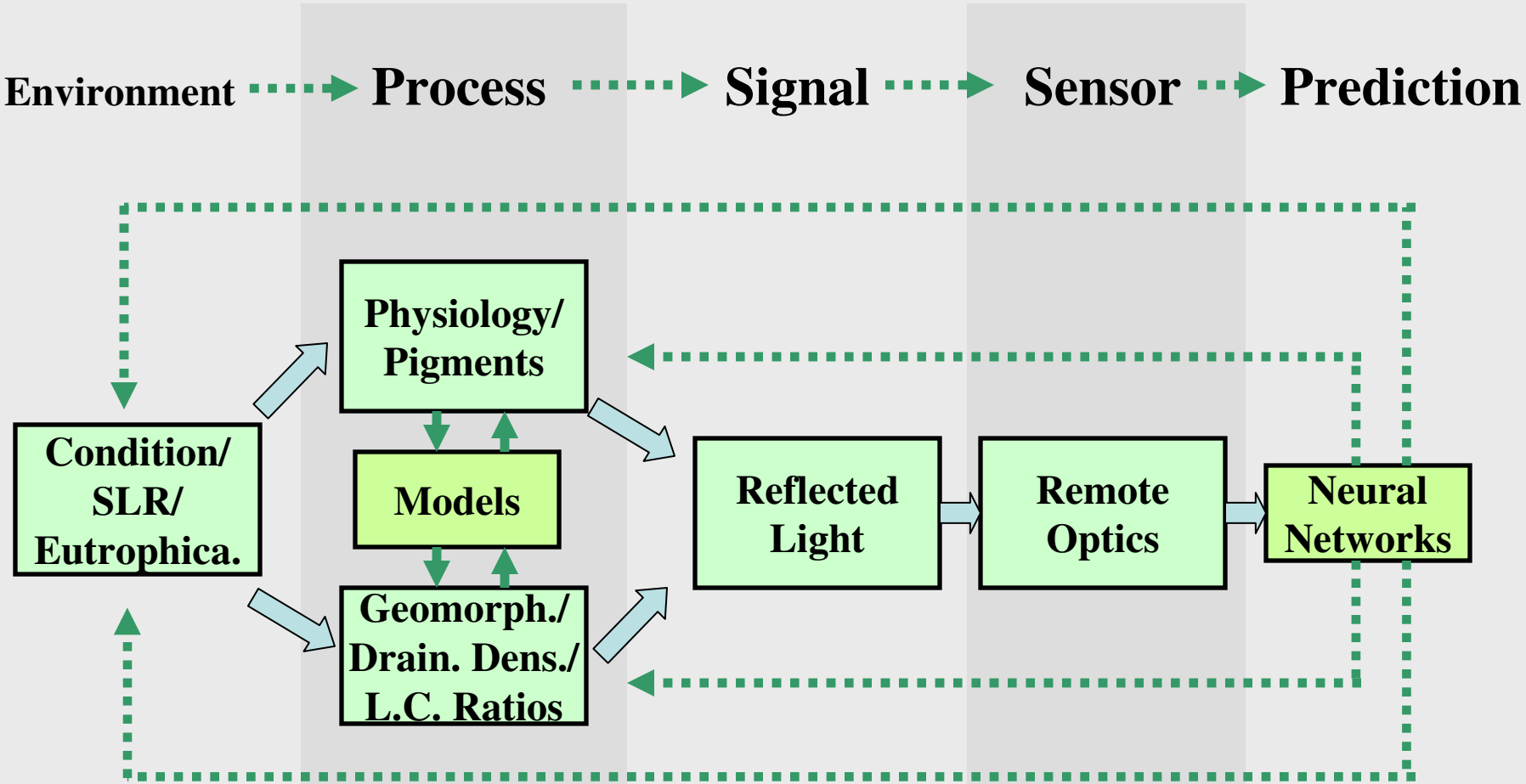
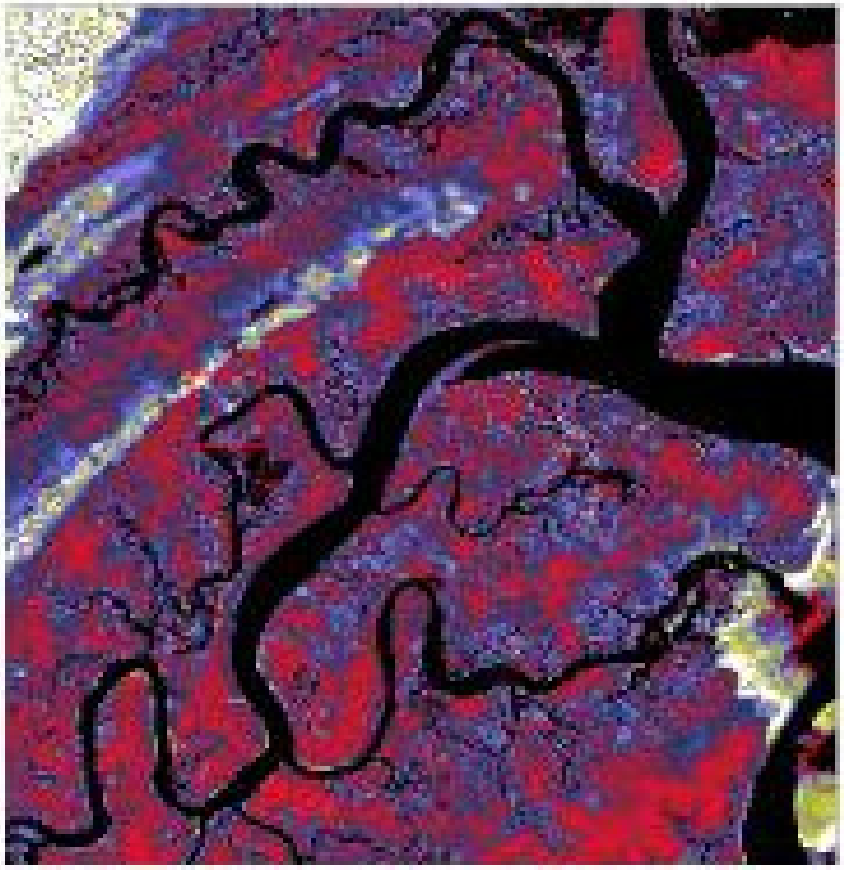
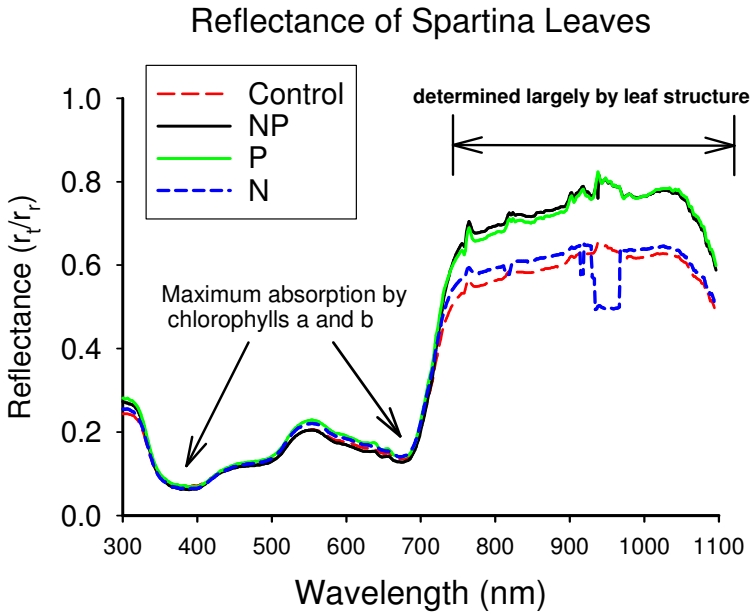
Coastal Wetland Indicator Development





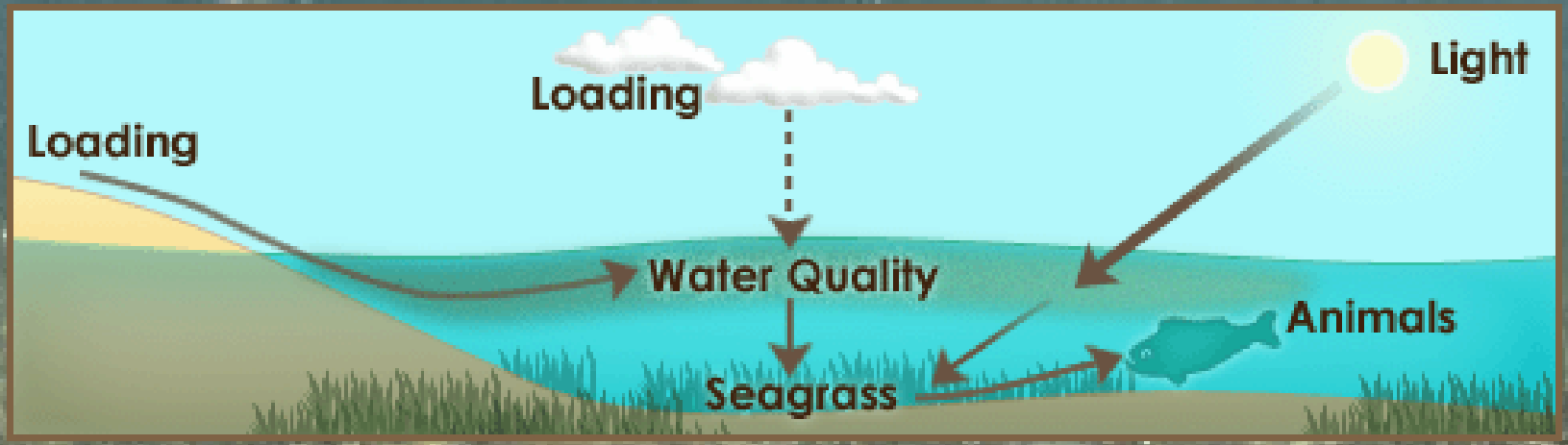
An ADAR image, classified to show chlorophyll density in a salt marsh at North Inlet, SC.



The spectrum of light reflected from the leaves of *Spartina alterniflora*. Plants treated with phosphorus had higher reflectance in the near infra-red .

Importance of SAV

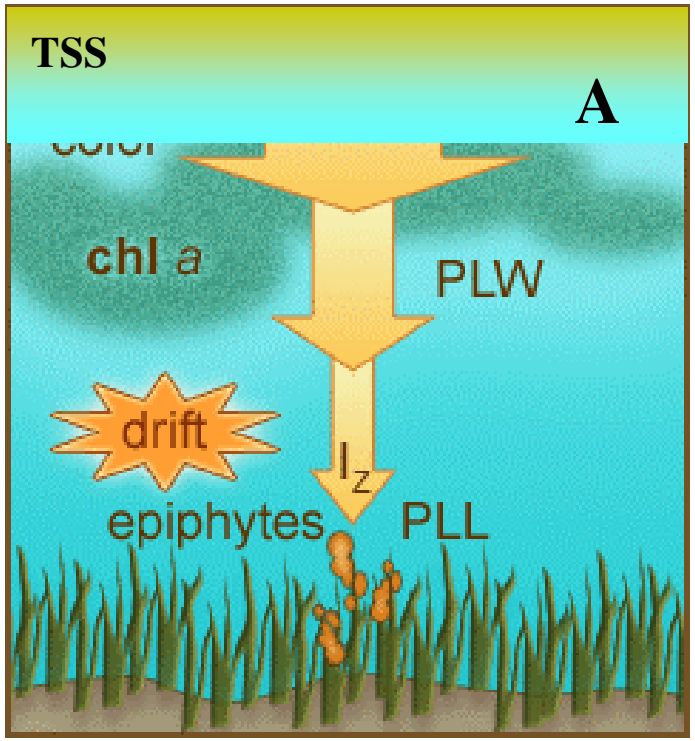
Conceptual Model (Virnstein *et al.* 2000)

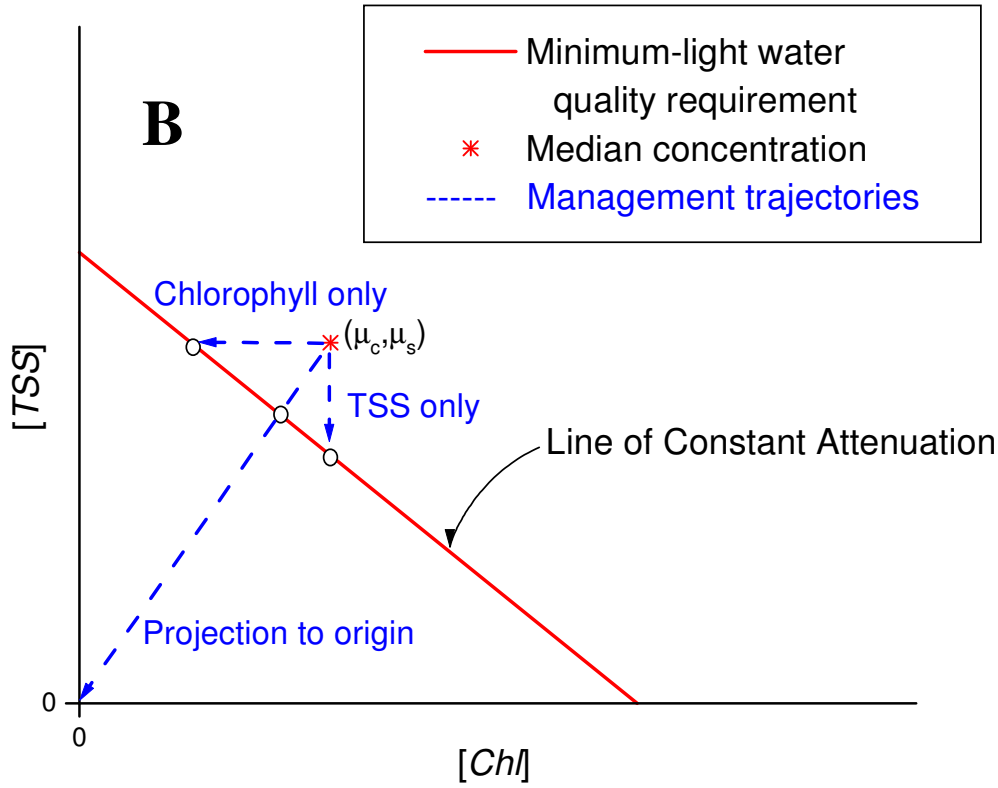


Loading → Water Quality →
(TMDL)

Light → **Seagrass** → Animals($)

SAV Habitat Requirement Diagnostic Tool





- **SAV are light-limited in turbid, bloom, or highly colored waters.**
- **Min. light requirements are known for some SAV**
- **Indicator could focus on light penetration from RS attributes of the water body (color, chl *a*, etc.)**